

**CLAIMS:**

1. A sprinkler comprising a housing fitted with an inlet port connectable to a water supply line and extending into an inlet chamber, a hollow stem member with an inlet end thereof being in flow communication with said inlet chamber and an outlet end thereof being in flow communication with an irrigation head; a diaphragm seal sealingly fixed at peripheral boundaries thereof to the housing and sealingly articulated to the stem member and supporting it at an essentially upright position; said diaphragm being deformable between a first position in which the irrigation head is retracted within the housing and a second position in which the irrigation head projects from the housing.

2. A sprinkler according to claim 1, wherein the stem member and the irrigation head are axially displaceable within the housing, respective to deformation of the diaphragm seal.

3. A sprinkler according to claim 1, where the diaphragm seal is a beveled annular disc made of an elastic material.

4. A sprinkler according to claim 1, wherein the housing comprises a shielding portion accommodating at least a portion of the stem member, and the irrigation head.

5. A sprinkler according to claim 4, further comprising a cover member articulated to one of the stem member and the irrigation head, whereby the shielding portion is closable by said cover member at the first position.

6. A sprinkler according to claim 4, wherein the shielding portion is formed with one or more drain ports.

7. A sprinkler according to claim 6, wherein the one or more drain ports are sealed at the first position.

8. A sprinkler according to claim 7, wherein at the first position a portion of the stem or of an articulated bridge portion displaces into sealing engagement with the one or more drain ports.

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9. A sprinkler according to claim 1, being a rotary sprinkler fitted with a reactionary rotatable sprinkler head.

10. A sprinkler according to claim 9, wherein the sprinkler head is formed with an axial boss rotatably received within a corresponding bushing receptacle formed  
5 at a top of a bridge member articulated to the stem member.

11. A sprinkler according to claim 9, wherein a bridge member articulated to the stem member is formed with an axial boss rotatably received within a corresponding bushing receptacle formed the sprinkler head.

12. A sprinkler according to claim 9, wherein the stem member is fitted at its  
10 outlet end with a swivel member supporting the rotatable sprinkler head.

13. A sprinkler according to claim 12, wherein the swivel member is articulated over the outlet end of the stem member by a snap-type engagement.

14. A sprinkler according to claim 1, wherein the irrigation head is bridgeless.

15. A sprinkler according to claim 14, wherein the irrigation head is fitted over  
15 a swivel freely rotatable over the outlet end of the stem member.

16. A sprinkler according to claim 15, wherein the irrigation head is attached to the swivel by a snap-type engagement.

17. A sprinkler according to claim 16, wherein the swivel is retained over the stem member by a snap-type engagement and where the irrigation head is snapingly  
20 mounted over the swivel to prevent spontaneous detachment thereof.

18. A sprinkler according to claim 1, wherein the inlet port is fitted with a filter.

19. A sprinkler according to claim 1, wherein the inlet chamber is fitted with a flow control assembly.

20. A sprinkler according to claim 19, wherein the flow control assembly  
25 comprises a flexible membrane retained within the inlet chamber which responsive to pressure differential thereover is deformable to constrict the cross section area of a liquid flow path into the inlet end of the stem member.

21. A sprinkler according to claim 19, wherein the flow control assembly is  
30 axially displaceable along with the stem member.

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22. A sprinkler according to claim 20, wherein at the first position the flexible membrane bears against the inlet port, thus serving as a leak preventing device, ensuring the inlet port is sealed until water pressure at the inlet port reaches a minimal nominal pressure.

5 23. A sprinkler according to claim 1, fitted with a differential pressure control assembly comprising a differential pressure membrane received within the inlet chamber and supported adjacent the inlet end of the stem member, wherein said membrane deforms responsive to pressure differential between an inlet face thereof and an outlet face thereof to thereby vary a through-flow path into said inlet end of  
10 the stem.

24. A sprinkler according to claim 1, wherein the diaphragm seal divides the housing into a pressurized zone at a side thereof facing the inlet port, and an essentially atmospheric pressure zone at its other side.

25. A sprinkler according to claim 1, wherein the housing is suitable for  
15 suspending at an inverted position with the inlet port up and the irrigation head down.

26. A sprinkler according to claim 1, wherein the diaphragm seal is biased into its first position.

27. A sprinkler according to claim 1, wherein the diaphragm seal is biased by a  
20 coiled spring bearing at a first end against a portion of the housing and at a second end against a portion of the stem member.

28. A sprinkler according to claim 1, wherein at its second position the diaphragm seal bears against a corresponding supporting surface of the housing.

29. A sprinkler according to claim 1, wherein the diaphragm seal is sealingly  
25 retained over an annular groove of the stem member.

30. A sprinkler according to claim 1, the diaphragm seal is articulated to the stem member eliminating radial and axial tolerance.

31. A sprinkler according to claim 1, wherein the stem member has an inlet portion thereof extending into the inlet chamber for supporting a flexible diaphragm

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which responsive to pressure differential is deformable to constrict a cross section area of a liquid flow path into the inlet end of the stem member.

32. A sprinkler according to claim 1, wherein the diaphragm seal is substantially un-tensed at either of its two respective positions.

5 33. A sprinkler according to claim 1, wherein the diaphragm seal is beveled.

34. A sprinkler according to claim 33, wherein the beveled diaphragm seal toggles into its respective first and second positions.

35. A sprinkler according to claim 33, wherein the beveled diaphragm seal comprises an outer peripheral portion for clamp engagement to the housing, an  
10 inner peripheral portion for annularly arresting the stem member, and a beveled portion intermediate said peripheral portions.

36. A sprinkler according to claim 1, wherein the diaphragm seal has a ziggurat-like shape.

37. A sprinkler according to claim 36, wherein the diaphragm seal comprises  
15 alternating first and second portions, said first portions being substantially vertical and said second portions being inclined.

38. A sprinkler according to claim 37, wherein said first portions remain substantially vertical at the first and second positions of the sprinkler.

39. A sprinkler according to claim 37, wherein at the second position at least  
20 said first and said second portions bear against corresponding support portions of the housing.

40. A sprinkler according to claim 1, wherein the diaphragm seal has a bellows-like shape.

41. A sprinkler according to claim 1, wherein the diaphragm seal is an elastic  
25 member pre-tensed and biased into its first position.

42. A sprinkler according to claim 1, wherein axial displacement of the stem member is restricted by a shoulder of the stem member engageable with a corresponding bearing surface of the housing.

43. A sprinkler according to claim 1, wherein the housing further comprises an  
30 attachment for articulation to a support.

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44. A sprinkler according to claim 1, wherein the outlet end of the stem member is fittable with replaceable nozzles, each having a different nominal flow rate.

45. A sprinkler according to claim 1, wherein the stem member is fitted,  
5 adjacent the outlet end thereof, with inwardly projecting radial flow straightening fins.

46. A sprinkler according to claim 1, wherein the stem member is supported within the housing in a fashion allowing only axial displacement thereof.

47. A sprinkler according to claim 1, wherein the housing is formed with a  
10 radial support to facilitate only axial displacement of the stem member.

48. A sprinkler according to claim 1, comprising a cover member serving for two or more of the functions comprising closing a shielding portion of the housing, serving as a bridge for supporting the irrigation head at an end thereof remote from an outlet nozzle, receiving the outlet nozzle, rotatably supporting the irrigation  
15 head, and closing draining ports of the housing at the first position.

49. A sprinkler according to claim 1, comprising a cover member supporting the irrigation head and fitted for closing the housing at the first position.

50. A sprinkler according to claim 1, comprising a cover member fitted with an irrigation head being in flow communication with the outlet end of the stem  
20 member.

51. A sprinkler according to claim 1, comprising a bridge member integrally fitted with an outlet nozzle being in flow communication with the outlet end of the stem member.

52. A sprinkler according to claim 1, wherein the irrigation head substantially  
25 retains its axial position with respect to the stem member, at the two respective positions.

53. A sprinkler according to claim 1, fitted for an upright or an inverted position.

54. A sprinkler according to claim 52, wherein a hook is provided for  
30 suspension of the sprinkler an upright position or at inverted position.

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55. A sprinkler comprising a housing fitted with an inlet port extending into an inlet chamber and comprising a beveled diaphragm seal having a first face thereof exposed to pressure within the inlet chamber and a second face exposed to atmospheric pressure; a stem member articulated to said beveled diaphragm seal  
5 and having an inlet end thereof extending into the inlet chamber and having an outlet end articulated to an irrigation head; wherein the diaphragm seal is normally retained at a first toggle position where the sprinkler head is concealed within the housing, and where water pressure within the inlet chamber deforms the beveled diaphragm seal into a second toggle position where the sprinkler head axially  
10 displaces and projects from the housing.